

**ABSTRACT**

A method of forming a planarized final copper structure comprising the following steps. A structure is provided having a patterned dielectric layer formed thereover. The patterned dielectric layer having an opening formed therein. A barrier layer is formed over the patterned dielectric layer, lining the opening. An initial planarized copper structure is formed within the barrier layer lined opening, and is planar with the barrier layer overlying the patterned dielectric layer. The initial planarized copper structure is recessed below the barrier layer overlying the patterned dielectric layer a distance to form a recessed copper structure. Any copper oxide formed upon the recessed copper structure is removed. A conductor film is formed over the recessed, copper oxide-free initial copper structure and the barrier layer. The excess of the conductor film is removed from over the barrier layer, and the excess of the barrier layer overlying the patterned dielectric layer is removed, by a planarization process to form the planarized final copper structure. The planarized final copper structure comprising: the lower, recessed copper oxide-free initial copper structure; and an overlying planarized conductor film, wherein the overlying planarized conductor film isolates the lower, recessed copper oxide-free initial copper structure from the ambient atmosphere.